

RESPONSE TO OFFICE ACTION OF JULY 16, 2003
U.S. PATENT APPLICATION SERIAL NO. 09/493,701
ATTORNEY DOCKET No. 64557.000013

receiving the search request and associating said search request with a first set of concepts from said lexicon;

relating the search request to a larger set of search terms, wherein terms in the larger set of search terms are close in meaning to the search request based on semantic relationships defined by the lexicon; and

searching a target data set for elements close in meaning to generating a match with the larger set of search terms based on the determined semantic distances.

68. (Canceled)

69. (Canceled)

70. (Canceled)

71. (Canceled)

72. (Previously presented) The method of claim 67 further comprising:

assigning a monetary value to the elements in the target data set, and ordering matched target data elements from the target data set in accordance with closeness in meaning between the search request and the larger set of search terms, wherein the monetary value is based on the closeness in meaning.

REMARKS

Applicants have amended independent claims 16, 17 and 67 to recite various features not disclosed or suggested by the cited references. Support for the amendments to claims 16 and 17 may be found in pages 20-26 of the specification, among other places. Similarly, support for the amendment to claim 67 may be found at pages 20-26 of the specification, among other places.

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No new matter is added with these amendments. For the reasons described below, the present application is now in condition for allowance and such disposition is earnestly requested.

REJECTIONS BASED ON ALLEGED PRIOR ART

Claims 16-19, 21-24, 27-29, 31-33, 35, 37, 39, 40, 42-45, 48, 50, 52-54, 56 and 58 stand rejected under 35 U.S.C. §102(b) as allegedly being anticipated by U.S. Patent No. 5,619,709 to Caid et al. (“Caid”). In addition, claims 20, 25, 28, 30, 34, 36, 38, 40, 46, 47, 49, 51, 55, 57, 59, 60-62, 64, and 65 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Caid in view of one or more other references. Claims 67 and 72 are also rejected over Caid in view of Voorhees and as to claim 72, further in view of Eldering.

Although Applicants do not agree with the propriety of these rejections, clarifying amendments to the claims have been made that illustrate differences between the claimed inventions and the references cited by the Office.

Specifically, claim 16 has now been amended to recite “receiving a first input and, based on interpretation of potential meanings, associating that input associated with a first set of concepts from said lexicon, said first input representing a first location in the semantic space; assigning a probability factor for each concept in the first set of concepts for the input received; and ... presenting results of a search conducted on the second set of concepts for data associated with the second set of concepts close in meaning to the input based on the determined semantic distances and probability factors associated with the concept in the first set of concepts.” Caid fails to disclose or suggest this combination of steps. Moreover, the other art applied in the rejections in this Office Action fail to provide any suggestion or motivation to correct for this deficiency in Caid.

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Rather, Caid places an input into the lexicon without regard to the fact that an input might have a plurality of meanings that require the input to be associated with a plurality of concepts (e.g., the first set of concepts) in the lexicon. Thus, Caid does not have reason to utilize the steps recited in claim 16 that determines probability factors for the first set of concepts used to assist in determining search results. As a result, Caid also fails to disclose or suggest determining search results based on proximity in the lexicon and probability of the meaning that determined the proximity.

Claims 17 and thus all of its dependent claims (18-25, 27-62, 64, and 65) are allowable over Caid because claim 17 has also been amended to recite “receiving an input and, based on interpretation of potential meanings, associating that input with a first set of concepts from said lexicon and representing a first location in said semantic space; assigning a probability factor for each concept in the first set of concepts for the input received; … presenting results of a search conducted on the target data set for target data close in meaning to the input based on the determined semantic distances and probability factors associated with the concept in the first set of concepts.” For at least the same reasons applicable to claim 16, claims 17 and its dependent claims are allowable over Caid.

Finally, claim 67 has been slightly amended to clarify the process performed. As amended, claim 67 now recites “searching a target data set for elements close in meaning to the larger set of search terms based on the determined semantic distances.” As amended, claim 67 is allowable over the proposed combination of Caid and Voorhees.

Moreover, as to the proposed combination of Caid and Voorhees as claim 67 as it was recited, the Office Action acknowledges that Caid fails to disclose a method wherein search

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terms are expanded to include search terms that are close in meaning to the original search request based on predetermined semantic relationships defined by the lexicon. The Office Action then alleges that it would have been obvious to expand search terms based on closeness of meaning in the search request based on semantic relationships. The Office Action alleges that modifying Caid in view of Voorhees would have been obvious to “ease[] the user’s burden when selecting query words,” citing to the Introduction in Voorhees. Applicants disagree.

The very Introduction in Voorhees indicates that Voorhees is concerned with problems associated with retrieval systems that use word matching as a basis for retrieval. *See* Introduction, page 1, first sentence. In other words, when the retrieval system focuses on retrieving content based on its inclusion of a specific word or combination of words, Voorhees teaches that automatically expanding the words provided by the user provides an advantage to the user. So, if the user put in the word “dog,” the results might include those pages that include the word “dog,” but also those that include the word “dogs” due to semantic expansion of “dog” to “dogs.”

There is no suggestion that such a system would have any applicability to a meaning-based retrieval system such as Caid. Specifically, Caid’s approach to retrieval is to assign documents a meaning through use of a vector and then generating a similar vector from an input query to determine relative connection between the vector of the input query and the vectors of various documents stored to determine if the document’s meaning is related to the input. *See* Caid, col. 2, lines 48-65 and col. 3, lines 8-16. Accordingly, Caid immediately takes an input query and generates a “meaning” rather than focusing on the exact words input. Thus, the reason given by Voorhees for using term expansion is not a problem that Caid recognizes. Moreover,

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by its Introduction, Voorhees itself is limited to term-based retrieval and not meaning based retrieval. Thus, one of ordinary skill in the art of the present invention very likely would not have even looked to Voorhees. And, even if one did look to Voorhees, one would have been instructed by Voorhees that its expansion was useful only for term-based retrieval systems and not the meaning-based retrieval systems of Caid. Finally, neither Caid or Voorhees provide any suggestion how one might blend all of the various concepts in Voorhees or Caid to yield claim 67's invention. Accordingly, claims 67 and 72 are allowable over the art cited in the Office Action.

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CONCLUSION

It is respectfully submitted that this application and all pending claims are in condition for allowance and such disposition is earnestly solicited. If the Examiner believes that a telephone conference or interview would advance prosecution of this application in any manner, the undersigned stands ready to conduct such a conference at the convenience of the Examiner.

It is believed that no additional fees are due in connection with filing this amendment. However, the Commissioner is hereby authorized to treat any current or future reply, requiring a petition for an extension of time for its timely submission as incorporating a petition for extension of time for the appropriate length of time. Applicants also authorize the Commissioner to charge any additional fees to the undersigned's Deposit Account No. 50-0206.

Respectfully submitted,



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**APPENDIX A - CLAIMS AFTER AMENDMENT (FOR EXAMINER'S
CONVENIENCE)**

16. A method comprising:

organizing concepts according to their meaning into a lexicon of predefined known relationships between the concepts, said lexicon defining elements of a semantic space;
receiving a first input and, based on interpretation of potential meanings, associating that input associated with a first set of concepts from said lexicon, said first input representing a first location in the semantic space;
assigning a probability factor for each concept in the first set of concepts for the input received;
receiving a second input associated with a second set of concepts from said lexicon, said second input representing a second location in the semantic space;
determining a semantic distance from the first location to the second location by combination of the semantic distance between each concept in the first set of concepts and each concept in the second set of concepts; and
presenting results of a search conducted on the second set of concepts for data associated with the second set of concepts close in meaning to the input based on the determined semantic distances and probability factors associated with the concept in the first set of concepts.

17. A method comprising:

creating a lexicon of predefined known relationships between the concepts that defines elements of a semantic space;

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receiving an input and, based on interpretation of potential meanings, associating that input with a first set of concepts from said lexicon and representing a first location in said semantic space;

assigning a probability factor for each concept in the first set of concepts for the input received;

maintaining a target data set, wherein the target data is associated with a second set of concepts from said lexicon that presents a second location in the semantic space;

determining a semantic distance from the first location in the semantic space to the second location in the semantic space by combination of the relative closeness in meaning between each concept in the first set of concepts and each concept in the second set of concepts; and

presenting results of a search conducted on the target data set for target data close in meaning to the input based on the determined semantic distances and probability factors associated with the concept in the first set of concepts.

18. A method according to claim 17 wherein the input is a data item and the associated set of concepts represents at least one of the meanings of said data item and important concepts relevant to the data item.

19. A method according to claim 18 wherein said data item is text.

20. A method according to claim 19 wherein said text is derived from the conversion of a printed text to electronic form.

21. A method according to claim 19 wherein said text is derived from audio data.

22. A method according to claim 19 wherein said text is derived from video data.

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23. A method according to claim 19 wherein said text is used to label an entity.
24. A method according to claim 23 wherein said labeled entity is one from the group of an image, video, sound file or document.
25. A method according to claim 23 wherein said labeled entity is a person and where the labeling represents data about the person such as his interests or geographical location.
27. A method according to claim 19 wherein said text is a user query.
28. A method according to claim 19 wherein said text is a domain name or a full URL.
29. A method according to claim 19 wherein said text is a document.
30. A method according to claim 19 wherein said text is web content.
31. A method according to claim 19 wherein said text is an electronic communication.
32. A method according to claim 18 wherein said data item is one from the group of an image, video, sound file or document.
33. A method according to claim 18 wherein said set of concepts is associated with a person.
34. A method according to claim 18 wherein said data item is one from the group of an advertisement, a product or service or a category.
35. A method according to claim 18 wherein said set of concepts associated with said data item is predetermined.
36. A method according to claim 35 wherein said set of concepts associated with said data item is specified by a user.

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37. A method according to claim 35 wherein said set of concepts associated with said data item represents at least one from the group of the meaning of said data item and information relevant to said data item.

38. A method according to claim 35 further comprising enabling a user to select at least one meaning from the set of possible meanings for said data item in order to provide the correct interpretation for establishing a set of concepts representing the meaning of the data item.

39. A method according to claim 17 wherein the target data is a data item and the associated set of concepts represents at least one of the meaning of said data item and important concepts relevant to the data item.

40. A method according to claim 39 wherein said data item is text.

41. A method according to claim 40 wherein said text is derived from the conversion of a printed text to electronic form.

42. A method according to claim 40 wherein said text is derived from audio data.

43. A method according to claim 40 wherein said text is derived from video data.

44. A method according to claim 40 wherein said text is used to label an entity.

45. A method according to claim 44 wherein said labeled entity is one from the group of an image, video, sound file or document.

46. A method according to claim 44 wherein said labeled entity is a person and where the labeling represents data about the person such as his interests or geographical location.

47. A method according to claim 44 wherein said labeled entity is one from the group of an advertisement, a product or service, or a category.

48. A method according to claim 40 wherein said text is a user query.

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49. A method according to claim 40 wherein said text is a domain name or a full URL.
50. A method according to claim 40 wherein said text is a document.
51. A method according to claim 40 wherein said text is web content.
52. A method according to claim 40 wherein said text is an electronic communication.
53. A method according to claim 39 wherein said data item is one from the group of an image, video, sound file or document.
54. A method according to claim 39 wherein said set of concepts is associated with a person.
55. A method according to claim 39 wherein said data item is one from the group of an advertisement, a product or service or a category.
56. A method according to claim 39 wherein said set of concepts associated with said data item is predetermined.
57. A method according to claim 56 wherein said set of concepts associated with said data item is specified by a user.
58. A method according to claim 56 wherein said set of concepts associated with said data item represents at least one from the group of the meaning of said data item and information relevant to said data item.
59. A method according to claim 56 further comprising enabling a user to select at least one meaning from the set of possible meanings for said data item in order to provide the correct interpretation for establishing a set of concepts representing the meaning of the data item.

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60. A method according to claim 17 wherein said second location is assigned a monetary value.

61. A method according to claim 60 wherein the price of retrieving target data is determined by the monetary value of a set of concepts it is associated with.

62. A method according to claim 60 wherein the price of being included in a target data set is determined by the monetary value of a set of concepts it is associated with.

64. A method according to claim 60 wherein the monetary value of a set of concepts is based on the cost of its sub-space in the semantic space.

65. A method according to claim 60 wherein the price of retrieving target data is dynamically calculated in response to an input query, the price of returning the target data in the result increasing with the relevance of its associated set of concepts to the query.

67. A method of generating a search result in response to a search request comprising:
organizing concepts according to their meaning into a lexicon of predefined known relationships between the concepts, said lexicon defining elements of a semantic space;
receiving the search request and associating said search request with a first set of concepts from said lexicon;

relating the search request to a larger set of search terms, wherein terms in the larger set of search terms are close in meaning to the search request based on semantic relationships defined by the lexicon; and

searching a target data set for elements close in meaning to the larger set of search terms based on the determined semantic distances.

72. The method of claim 67 further comprising:

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assigning a monetary value to the elements in the target data set, and ordering matched target data elements from the target data set in accordance with closeness in meaning between the search request and the larger set of search terms, wherein the monetary value is based on the closeness in meaning.